

FEWER FLORIDA RARITIES: CHANGING FLORA OF PINEOLA GROTTO, CITRUS COUNTY¹

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The limestone grotto near Pineola has been searched for ferns ever since its discovery by A. H. Curtiss in 1881. Roland M. Harper (1916) graphically recounted this eventful discovery of an unspoiled fern flora, thitherto unknown to botanists. Curtiss' discovery of previously unreported species in the United States, aroused interest among his contemporary botanists. J. D. Smith, 1883, journeyed to Pineola, finding a few species not noticed by Curtiss. Harper's own expedition, 1915, resulted in an annotated list of 12 species, inclusive of all the previously recorded ones which he observed and 2 of his own finding. The list was increased to 14 species by J. K. Small (1920A) who journeyed to the area in 1918.

The physical aspects and the vegetation of the grotto are eloquently narrated by Curtiss, Harper and Small. In Small's own words, "we found ourselves in a veritable amphitheater, surrounding a cypress swamp. On entering through rocky wall we found ourselves among boulders, chasms, canons, natural bridge, and caves of eroded limestone. Everything was partly or completely covered with fern growth of at least a dozen different kinds of ferns . . . an enhancing grove of both conifers and broad-leaved trees over-shadowed the grotto, altogether a grove and a grotto that would have been a delight to the devotees of the worship of Baal; but this sanctuary had already been profaned. . . . After nature has built and adorned this grotto beyond power of words to describe, man has recently started the task of utterly destroying it." At the edge of the grotto a mill was pulverizing the rock for commercial liming of cultivated fields.

The excavated site, an extensive pit overgrown with weeds and introduced grasses, remains. Just south of it, the part that escaped utter destruction, curves its crescentic contour toward Withlacoochee River marsh. This—the present day Pineola Fern Grotto—features no caves and canon, only terrain sufficiently disrupted and precarious to justify utmost precaution in maintaining a stable foothold. Boulders, cliffs and ledges, are all more or less covered with mats of lichens, mosses, ferns and flowering herbs, beneath high-flung canopy of the hammock tree association of primeval times. Even this remnant of a natural area is being despoiled by grazing herds. As a part of a fenced and posted ranchland for decades, the natural vegetation along hammock margins and on the lower rocks of the grotto has been replaced by invading forbs and local weeds.

¹ Contribution 12, Botanical Laboratories, University of South Florida. .
SIDA 1 (6): 299—303, 1964.

To this grotto, the author, aided by Mr. and Mrs. James A. Lassiter of Tampa, has made several collecting and study trips during the past two years. It is hoped that the appended enumeration of species of an area whose botanical history dates back to 1881, is deemed worthy of placing on record.

Although the number of species of ferns in the present list is greater than that of the previous ones, the populations in a given area are less concentrated and widely dispersed. The rarest of the rare spleenworts, the species most sought, have become decimated to the verge of extinction. In 1962 *Asplenium abscissum* was no longer in evidence; *A. × Curtissii* was represented only by three known plants. All the species of trees previously reported in hammock associations have been observed with exception of *Acer rubrum*, *Persea borbonia* and *Cornus florida*. They are frequently encountered off the immediate area; it is assumed that the record refers to the destroyed hammock association. In addition, vigorous and prolific *Sapindus marginatus* has been observed in various stages of growth.

The loss of a natural area in the keeping of man is regrettable. Even after decades of misuse, if the causes of destruction could be removed, restoration of the grotto by nature's creative forces lies within possibility. The Pineola Fern Grotto is worthy of preservation.

PSILOACEAE

Psilotum nudum (L.) Beauv. Sight record of 1 plant; epiphyte.

SCHIZAEACEAE

Anemia adiantifolia (L.) Sw. Sight record of 1 sterile colony, on low rocks.

OPHIOGLOSSACEAE

Botrychium dissectum Spreng. var. *tenuifolium* (Underw.) Farw. 26404.

Few plants noted on a rocky margin of hammock.

OSMUNDACEAE

Osmunda regalis L. 26416. A sterile plant noted in margin of swamp, Withlacoochee River. One leaf collected.

POLYPODIACEAE

Adiantum tenerum Sw. 25462. Occasional.

Asplenium abscissum Willd. 25468. Not noted since 1962. Apparently exterminated.

A. × Curtissii Underw. 25470. Almost completely decimated.

A. heterochroum Kunze, 25468. Very rare.

A. resiliens Kunze, 26812. Rare, low rocks.

A. verecundum Chapm. 26021. Rare.

Dryopteris ludoviciana (Kunze) Small. 26043. Vigorous growth.

Polypodium dispersum ined. 26808. Rare.

P. pectinatum L. 26499. Rare.

P. plumula HBK. 26446. Rare.

P. polypodioides (L.) Watt. Sight record, epiphytic.

Pteris cretica L. 27395. Two plants noted. Rare.

P. vittata L. 25469. Local; rare.

Tectaria heracleifolia (Willd.) Underw. 25460. Shady limestone slopes; young ferns noted; rare.

Thelypteris dentata (Forsk.) E. St. John, 25471. Rare.

T. normalis (C. Chr.) Mox. 25476. Occasional.

T. reptans (J. F. Gmel.) Morton. 25461. Frequent on shady sloping limestone.

T. Torresiana (Gaud.) Alston. 25467. (*T. setigera* (Blume) Kuntze).

T. tetragona (Sw.) Small, 26394. Rare.

TAXODIACEAE

Taxodium distichum (L.) Rich. Sight record. The swamp-facing side of the grotto.

GRAMINEAE

Opismenus setarius (Lam.) R. & S. 25455. Frequent in thin soil over limestone.

Panicum anceps Michx. 25456. Few tufts noted, in gravelly soil of grotto margin.

P. jooirii Vasey, 26032. Few plants in vernal phase; among marginal grasses.

Paspalum conjugatum Berg. 26443. Among grasses, escaped from cultivation. Bottom of grotto.

P. Langei (Fourn.) Nash. 26393.

Uniola sessiliflora Poir. 26444. Few plants with wood ferns, grotto bottom.

PALMAE

Rhapidophyllum Hystrix (Fraser) Wendl. 25443. Few over rocks.

Sabal minor (Jacq.) Pers. 26421. Marginal area of grotto facing the river.

Serenoa repens (Bartr.) Small, sight record; margin of hammock.

ARACEAE

Arisaema Dracontium (L.) Schott, 26423A. Grotto bottom between rock walls. Occasional.

BROMELIACEAE

Tillandsia simulata Small. 26050. Occasional.

T. usneoides L. Sight record. Frequent.

COMMELINACEAE

Callisia cordifolia (Sw.) Anders. & Woods. 25473. Over low mossy rocks.

LILIACEAE

Smilax auriculata Walt. 26053. Frequent.

AMARYLLIDACEAE

Crinum americanum L. 26420. Soft soil of grotto margin, facing the river swamp.

IRIDACEAE

Sisyrinchium rosulatum Bicknell. 26048. Crevices of low rocks; uncommon.

ORCHIDACEAE

Habenaria quinqueseta (Michx.) Sw. 26389. Several plants along fence of pasture adjoining the grotto hammock.

PIPERACEAE

Peperomia leptostachya (Nutt.) Chapm. 26392. Thriving colony over crumpled lichen-coated rocks.

CORYLACEAE

Carpinus caroliniana Walt. Frequent; sight record.

FAGACEAE

Quercus Michauxii Nutt. 26040. Very large trees in grotto hammock; specimen from fallen branch.

Q. Shumardii Buckl. 26391. Spec. from fallen branch. Very large trees over grotto.

Q. virginiana Mill. Sight record. Very large trees with expansive crowns over grotto and in hammock.

ULMACEAE

Celtis laevigata Willd. 26027. Embankment of the excavated grotto site.

Ulmus floridana Chapm. Sight record. Large trees in hammock and margin of grotto.

URTICACEAE

Boehmeria cylindrica (L.) Sw. 25925. Frequent in grotto.

Parietaria floridana Nutt. 25933. Frequent in moist shady hollows of grotto.

Urtica chamaedryoides Pursh. 25452. Persisting in rock clefts, shady moist soil.

PHYTOLACCACEAE

Petiveria alliacea L. 25453. Few plants in shade over grotto rocks.

Rivina humilis L. 26034. Slender shrubs in rock clefts. Infrequent.

CARYOPHYLLACEAE

Arenaria lanuginosa (Michx.) Rohrb. 25474. Local. Stems trailing from rock walls.

Drymaria cordata (L.) Willd. Sight record. Low moist hollows with *Stellaria*.

Stellaria media (L.) Cyrill. Low moist clefts, floor of grotto. Anthers 5, red.

RANUNCULACEAE

Clematis reticulata Walt. 26041. One vine noted base of grotto wall.

HAMAMELIDACEAE

Liquidambar styraciflua L. 26051. Frequent over rocks and in hammock.

SAXIFRAGACEAE

Decumaria barbara L. 26396. Stems creeping in mosses and lichen at grotto walls, and twining high on tallest trees. Local, abundant.

ROSACEAE

Rubus trivialis Michx. Sight record; on low rocks of grotto.

LEGUMINOSAE

- Amphicarpa bracteata* (L.) Fern. 26422. In soil-filled clefts of low rocks; flowers bluish-lavender; uncommon.
- Cassia occidentalis* L. 25441. Oak and palm grove adjoining grotto terrace. Infrequent.
- Desmodium cuspidatum* (Muhl.) Loud. 1 plant noted.
- D. paniculatum* (L.) DC. 26386. In shade over low rocks, and swamp margin adjoining the grotto.
- Galactia Macreei* M. A. Curtis. 26036. Grassy margin of trail to grotto entry.

RUTACEAE

- Citrus aurantium* L. 26806. Several trees noted; eastern part of hammock.
- Zanthoxylum Fagara* (L.) Sarg. 26409. Small, sterile shrubs; few on high rocks.

MELIACEAE

- Melia Azedarach* L. 26027. Few trees on the rim of the old pit.

ANACARDIACEAE

- Rhus Toxicodendron* L. Sight record. Fairly general in grotto floor.

ACERACEAE

- Acer Negundo* L. 25916. Frequent over grotto rocks; trees large with full, leafy crown.

SAPINDACEAE

- Sapindus marginatus* Willd. 26039. Frequent over rocks in hammock.

RHAMNACEAE

- Sageretia minutiflora* (Michx.) Trel. 26023. Young shrubs at base of rock wall.

VITACEAE

- Parthenocissus quinquefolia* (L.) Planch. 26026. High climbing over tree on rim of the old pit.
- Vitis rotundifolia* Michx. High climbing; in oaks. Sight record.

TILIACEAE

- Tilia floridana* Small. 26045. Large tree, margin of grotto hammock, on trail.

MALVACEAE

- Pavonia spinifex* (L.) Cav. 25475. Locally frequent over grotto on rocks.

VIOLACEAE

- Viola floridana* Brainerd. 26803. In moist soil of shady hammock and grotto rocks.

LYTHRACEAE

- Decodon verticillatus* (L.) Ell. 26441. Shallow water on cypress pond, margin of grotto hammock.

NYSSACEAE

- Nyssa biflora* Walt. 26054. Young shrubs in abundant fruit, swampy tract adjoining the grotto hammock.

MELASTOMACEAE

Rhexia mariana L. var. *exalbida* Michx. 26047. Swamp margin with Decodon.

UMBELLIFERAE

Ptilimnium capillaceum (Michx.) Raf. 25923. In moist rock clefts of grotto.

Sanicula canadensis L. 25934. Common on grotto rocks.

PRIMULACEAE

Samolus parviflorus Raf. 25922. Wet soil of swamp, grotto margin. Few.

ASCLEPIADACEAE

Cynanchum palustre (Pursh) Heller. 25928. Frequent over grotto trees.

CONVOLVULACEAE

Ipomoea trichocarpa Ell. 26438. Luxuriant colony in grotto and hammock margin.

VERBENACEAE

Callicarpa americana L. 26025. Occasional. Plants rooted in clefts of rocks.

LABIATAE

Hyptis mutabilis (A. Rich.) Briq. 26024. Few plants noted in grassy area.
Leonotis nepetaefolia R. Br. 26423. Open shade of *Carya* along trail to grotto.

Salvia coccinea Juss. 26022. Frequent in grotto over rocks.

S. lyrata L. 26804. Rosettes only noted. Openings of vegetation along trail.

SOLANACEAE

Capsicum frutescens L. 25447. One small shrub in abundant fruit, in grotto.

Solanum floridanum Shuttlw. 26415. Occasional in rock clefts.

SCROPHULARIACEAE

Bacopa caroliniana (Walt.) Robins. 26388. Shallow water of cypress pond, adjoining grotto hammock.

BIGNONIACEAE

Campsis radicans (L.) Seem. Sight record.

ACANTHACEAE

Dicliptera assurgens (L.) Kuntze. 26439. Over high rocks, scattered. Infrequent.

Dyschoriste humistrata (Michx.) Kuntze. 25919. Wet soil of swamp border along grotto.

Ruellia carolinensis (Walt.) Steud. 25918. Frequent, in thin soil of rock ledges.

RUBIACEAE

Galium pilosum Ait. var. *laevicaule* (Weath.) Blake. 25932. Occasional among shady boulders.

Mitchella repens L. 25926. Few plants noted, among ferns.

Psychotria nervosa Sw. 26037. Occasional in rocky holes and on top of rocks.

VALERIANACEAE

Valeriana scandens L. 25924. Well established in low fissures of limestone.

CUCURBITACEAE

Melothria pendula L. 26922. Frequent over grotto herbs and grasses.

CAMPANULACEAE

Lobelia homophylla F. E. Wimmer. 26319. Small colony in shade, low rocks.

COMPOSITAE

Ambrosia elatior L. 26319. Weedy.

Aster pinifolius Alexander, 26400.

Bidens bipinnata L. 25921. Weedy throughout low rocks.

Bidens pilosa L. 26399. Few plants noted, in grassy areas, among rocks.

Cirsium sp. Sight record of rosettes only.

Elephantopus carolinianus Willd. 25452. Well established in undergrowth.

Eupatorium coelestinum (L.) DC. 26031. One colony noted.

Haplopappus divaricatus (Nutt.) Gray. 26397. Open ranchland adjoining the grotto.

Pyrrhopappus carolinianus (Walt.) DC. 26030. One plant noted in hammock adjoining grotto.

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